

REMARKS

By this Amendment, Applicants amend claims 1, 7, and 15 to more appropriately define the invention. Claims 1-21 remain pending.

In the final Office Action ("OA"), the Examiner rejected claims 1-21 under 35 U.S.C. § 103(a) as unpatentable over Shibata et al., U.S. Patent No. 5,371,373 ("*Shibata*") in view of Shimada et al., U.S. Patent No. 5,348,902 ("*Shimada*"), and further in view of Murai et al., U.S. Patent No. 5,250,812 ("*Murai*"). Applicants respectfully traverse the Examiner's rejection under § 103(a), and submit that a *prima facie* of obviousness has not been established for claims 1-21 because *Shibata*, *Shimada*, and *Murai*, whether taken alone or in combination, fail to teach or suggest all the claim elements.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03, ed. 8, rev. 1 (Feb. 2003) (quoting *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2143 at 2100-122 to 127.

Claim 1 is directed to a charged beam exposure for delineating patterns of a system on a substrate to describe the system in a logic expression, to convert the logic expression into a connection of standard cells, and to delineate patterns of the standard cells on the substrate comprising a combination of elements including, *inter alia*, a "standard cell library recording means for recording a standard cell library having an information configured to designing the

pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells, and for recording the standard cell library having first placement positions of the shaping holes on said CP apertures related to the standard cells corresponding to the shaping holes.” Independent claims 7 and 15, although different in scope, include similar recitations.

In the Request For Reconsideration After Final filed on July 8, 2004, Applicants argued that *Shibata*, *Shimada*, and *Murai*, whether taken alone or in combination, at least fail to teach or suggest the standard cell recording means recited in each of independent claims 1, 7, and 15. In the Advisory Action mailed on August 9, 2004, the Examiner stated that:

“[t]he Shibata (373) invention used two masks (apertures) for the lithography method. Standard cell shapes (CAD/Lithography data) are formed in both mask’s (sic). The second mask is used for cell projection of a particular repetitive pattern, that has been selected to reduce the number of shots, which is equivalent to ‘standard cell library recording means for recording a standard cell library having information configured to designing the pattern of the system by using the standard cells, and for recording the standard cell library having first placement positions of the shaping holes on said CP apertures related to the standard cells corresponding to the shaping holes,’ as recited in claims 1, 7, and 15. See Column 4, lines 24-61.” Continuation Sheet of Advisory Action.

Applicants submit that claims 1, 7, and 15 are allowable at least for the reasons set forth in their July 8 Request For Reconsideration, as well as the following:

Applicants respectfully submit that none of the references, either taken alone or in combination, teach or suggest “standard cell library recording means for recording a standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells, and for recording the standard cell library having first placement positions of the shaping

holes on said CP apertures related to the standard cells corresponding to the shaping holes,” as recited in independent claims 1, 7, and 15.

Shibata is directed to an electron beam lithography apparatus which includes a lithography data preparation unit for classifying input data into repetitive and non-repetitive patterns. *Shibata*, Fig. 3. More specifically, *Shibata* in column 3, lines 24-61, cited by the Examiner on the Continuation Sheet of the Advisory Action and on page 8 of the final Office Action, discloses that unit patterns are employed to delineate input data classified as repetitive patterns. Further, patterns of delineated input data classified as non-repetitive patterns are further divided into unit areas, which are classified into repetitive unit areas and non-repetitive unit areas. Thus, the cited passage of *Shibata* merely describes classifying the input data into repetitive and non-repetitive patterns, but bears no relation to elements of Applicants’ claimed combination including, for example, “standard cell library recording means for recording a standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells,” as recited in claims 1, 7, and 15.

Further, Applicants respectfully submit that the Examiner has mischaracterized the teachings of *Shibata*. In the Advisory Action, the Examiner alleges that “*Shibata* (373) invention used two masks (apertures) for the lithography method. Standard cell shapes (CAD/Lithography data) are formed in both mask’s (sic). The second mask is used for cell projection of a particular repetitive pattern, that has been selected to reduce the number of shots, which is equivalent to [Applicants’ claimed standard cell library recording means].” Continuation Sheet of Advisory Action. It appears as if the Examiner is attempting to equate *Shibata*’s second mask with Applicants’ claimed standard cell library recording means. Applicants respectfully disagree with

the Examiner's characterization and point out that the claimed "standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells" is not equivalent to *Shibata's* second mask. In other words, a mask can not include "standard cells having functions, shapes of outlines and input/output positions of the standard cells," as required by claims 1, 7, and 15.

Thus, in view of the above remarks, Applicants respectfully submit that none of the cited passages of *Shibata* relied on by the Examiner teach or suggest the above quoted element of claims 1, 7, and 15.

Shimada fails to cure the deficiencies of *Shibata*. *Shimada* is directed to a method for designing a cell pattern for use with different design automation (DA) systems. *Shimada* discloses that the cells designed by the DA systems are divided into logic function portion and an input/output portion. *Shimada*, in column 1, lines 14-26, cited by the Examiner on page 8 of the OA, discloses that in an automatic placing and routing system for fabricating a semiconductor integrated circuit device, cells are placed and routed between terminals on a semiconductor substrate. These cells include basic cells of a standard cell system and are registered in a library as a functional block (*Shimada* at col. 1, lines 18-20), but do not include a "standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells," as required by claims 1, 7, and 15.

Murai also fails to cure the deficiencies of *Shibata*. *Murai* is directed to an electron beam lithography apparatus. More specifically, turning to the passages of *Murai* cited by the Examiner on page 8 of the final Office Action, *Murai*, at column 4, lines 11-22 describes a flow chart for

producing delineation data, whereby, first, LSI data is given as CAD data, which is stored in a memory. The CAD data includes data of non-repetitive patterns (or random patterns) and data of repetitive patterns having unit patterns repeated at a coordinate and a pitch designated. Only the repetitive patterns are extracted from CAD data. Thus, *Murai*, in this cited passage, discloses that CAD data corresponds only to the general information of the repetitive pattern and non-repetitive patterns. Such information is unrelated to the claimed “standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells.”

Therefore, *Murai* necessarily does not teach or suggest at least a charged beam exposure comprising, *inter alia*, “standard cell library recording means for recording a standard cell library having an information configured to designing the pattern of the system by using the standard cells having functions, shapes of outlines and input/output positions of the standard cells,” as recited in claims 1, 7, and 15.

Thus, neither *Shibata*, nor *Shimada*, nor *Murai*, can overcome the above-described deficiencies of the other, and the applied references fail to teach or suggest all the elements of claims 1, 7, and 15. Claims 1, 7, and 15 are allowable, and claims 2-6, 8-14, and 16-21 are allowable at least due to their dependence from claims 1, 7, and 15, respectively.

In view of the foregoing, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: October 7, 2004

By: Rajeev Gupta
Rajeev Gupta
Reg. No. 55,873